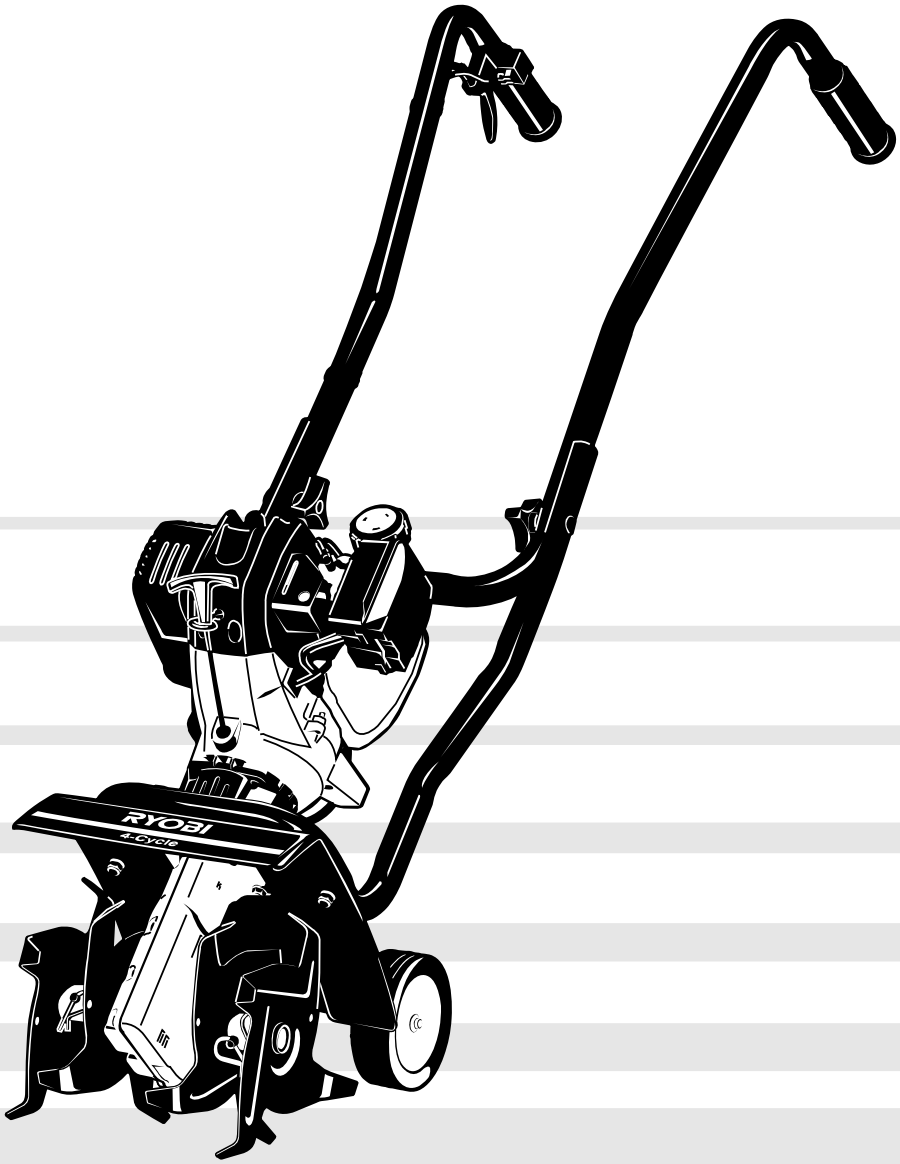
RYOBI®

510r

4-Cycle Garden Cultivator

OPERATOR'S MANUAL



FOR QUESTIONS, CALL 1-800-345-8746 in U.S. or
1-800-265-6778 in CANADA
www.ryobi.com

IMPORTANT MANUAL **DO NOT THROW AWAY**

INTRODUCTION

THANK YOU

Thank you for buying this quality product. This modern outdoor power tool will provide many hours of useful service. You will find it to be a great labor-saving device.

This operator's manual provides you with easy-to-understand operating instructions. Read the whole manual and follow all the instructions to keep your new outdoor power tool in top operating condition.

The other manual that came with your power tool, the parts manual, contains all the information that you need to order parts.

PRODUCT REFERENCES, ILLUSTRATIONS AND SPECIFICATIONS

All information, illustrations and specifications in this manual are based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

Copyright© 2000 Ryobi Outdoor Products, Inc.
All Rights Reserved.

SERVICE INFORMATION

Service on this unit both within and after the warranty period should be performed only by an authorized and approved service dealer.
Dial:

- **1-800-345-8746** or **www.ryobi.com** on the world wide web for authorized service dealers in the United States

Or

- **1-800-265-6778** in Canada to obtain the listing of the authorized service dealer nearest you.

to obtain the listing of the authorized service dealer nearest you.

DO NOT RETURN THE UNIT TO THE RETAILER.

NOTE: PROOF OF PURCHASE WILL BE REQUIRED FOR WARRANTY SERVICE.

Make sure this manual is carefully read and understood before starting or operating this equipment.

THIS PRODUCT IS COVERED BY ONE OR MORE US PATENTS, OTHER PATENTS PENDING.

TABLE OF CONTENTS

I. California Emission Regulations 3

II. Rules for Safe Operation 4-7
A. Important Safety Information 4
B. Safety and International Symbols 5-6
C. Know Your Unit 7

III. Assembly Instructions 8
A. Assembling the Unit 8
B. Positioning the Handlebars 8
C. Installing the Wheel Bracket Assembly 8

IV. Oil and Fuel Information 9-10

V. Starting/Stopping Instructions 10-11

VI. Operating Instructions 12
A. Operating Tips 12
B. Adjusting Tine Depth 12

VII. Maintenance and Repair Instructions 13-18
A. Maintenance Schedule 13
B. Tine Removal and Replacement 13
C. Checking the Oil Level 14
D. Changing the Oil 14
E. Air Filter Maintenance 15
F. Carburetor Adjustment 16
G. Rocker Arm Clearance 16-17
H. Replacing the Spark Plug 18
I. Spark Arrestor Maintenance 18
J. Accessories/Replacement parts 18

VIII. Cleaning and Storage 19
A. Cleaning the Unit 19
B. Storage 19
C. Long Term Storage 19
D. Transporting 19

IX. Troubleshooting Chart 20

X. Specifications 21

XI. Warranty 23-24

CONTENTS OF CARTON

This unit includes the following:

- Model 510r Garden Cultivator with Handlebars
- Wheel Bracket Assembly (located in top insert)
- Hardware Pack
- Bottle of 4-Cycle Oil
- Operator's Manual
- Parts Manual

Examine all parts to make certain that nothing is missing and no breakage has occurred during shipping. Any damaged or missing part must be replaced before using this product.

CALIFORNIA EMISSION REGULATIONS

This engine meets U.S. EPA PH1 and 2000 model year and later California emissions regulations for small off-road engines. These units are identified by the label on the engine of your product. A typical identification label is shown.

To ensure that your unit continues to meet these regulations, refer to the following information and instructions in this operator's manual.

RYOBI®

IMPORTANT ENGINE INFORMATION

ENGINE DISPLACEMENT *26.2cc*
ENGINE FAMILY: *XN4XS.0264A2; EM*

THIS ENGINE MEETS U.S. EPA PH1 AND 2000 MODEL YEAR AND LATER CALIFORNIA EMISSION REGULATIONS FOR SMALL OFF-ROAD ENGINES. REFER TO OPERATOR'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.

California Proposition 65 Warning:

WARNING

THE ENGINE EXHAUST FROM THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

SPARK ARRESTOR

NOTE: For users on U.S. Forest Land and in the states of California, Maine, Oregon and Washington. All U.S. Forest Land and the state of California (Public Resources Codes 4442 and 4443), Oregon and Washington require, by law that certain internal combustion engines operated on forest brush and/or grass-covered areas be equipped with a spark arrestor, maintained in effective working order, or the engine be constructed, equipped and maintained for the prevention of fire. Check with your state or local authorities for regulations pertaining to these requirements. Failure to follow these requirements could subject you to liability or a fine. **This unit is factory equipped with a spark arrestor**. If it requires replacement, ask your LOCAL SERVICE dealer to install the **Accessory Part #180890 Spark Arrestor Screen.**

FOR QUESTIONS, CALL 1-800-345-8746 IN U.S. OR 1-800-265-6778 in CANADA

WARNING!

Read the Operator's Manual(s) and follow all warnings and safety instructions. Failure to do so can result in serious injury to the operator and/or bystanders.

WARNING: The operation of any power tool can cause foreign objects to be thrown into your eyes. This can lead to severe eye damage. Before commencing power tool operation, always wear safety glasses or goggles that are marked as meeting ANSI Z87.1 standards, and a full face shield when needed.

RULES FOR SAFE OPERATION

The purpose of safety symbols is to attract your attention to possible dangers. The safety symbols, and their explanations, deserve your careful attention and understanding. The safety warnings do not by themselves eliminate any danger. The instructions or warnings they give are not substitutes for proper accident prevention measures.

SYMBOL MEANING

SAFETY ALERT SYMBOL: Indicates danger, warning, or caution. Attention is required in order to avoid serious personal injury. May be used in conjunction with other symbols or pictographs.

NOTE: Advises you of information or instructions vital to the operation or maintenance of the equipment.

DANGER: Failure to obey a safety warning will result in serious injury to yourself or to others. Always follow the safety precautions to reduce the risk of fire, electric shock, and personal injury.

WARNING: Failure to obey a safety warning can result in injury to yourself and others. Always follow the safety precautions to reduce the risk of fire, electric shock, and personal injury.

CAUTION: Failure to obey a safety warning may result in property damage or personal injury to yourself or to others. Always follow the safety precautions to reduce the risk of fire, electric shock, and personal injury.

• IMPORTANT SAFETY INFORMATION •

READ ALL INSTRUCTIONS

BEFORE OPERATING

- Read the instructions carefully. Be familiar with the controls and proper use of the unit.
- Do not operate this unit when tired, ill, or under the influence of alcohol, drugs, or medication.
- Children and teens under the age of 15 must not use the unit, except for teens guided by an adult.
- All guards and safety attachments must be installed properly before operating the unit.
- Inspect the unit before use. Replace damaged parts. Check for fuel leaks. Make sure all fasteners are in place and secure. Replace parts that are cracked, chipped, or damaged in any way. Do not operate the unit with loose or damaged parts.
- Carefully inspect the area before starting the unit. Remove all debris and hard or sharp objects such as glass, wire, etc.
- Clear the area of children, bystanders, and pets. At a minimum, keep all children, bystanders and pets outside a 50 feet (15 m) radius; there still may be a risk to bystanders from thrown objects. Bystanders should be encouraged to wear eye protection. If you are approached, stop the unit immediately.
- Squeeze the throttle control and check that it returns automatically to the idle position. Make all adjustments or repairs before using unit.

SAFETY WARNINGS FOR GAS UNITS

WARNING: Gasoline is highly flammable, and its vapors can explode if ignited. Take the following precautions:

- Store fuel only in containers specifically designed and approved for the storage of such materials.
- Avoid creating a source of ignition for spilled fuel. Do not start the engine until fuel vapors dissipate.
- Always stop the engine and allow it to cool before filling the fuel tank. Never remove the cap of the fuel tank, or add fuel, when the engine is hot. Never operate the unit without the fuel cap securely in place. Loosen the fuel tank cap slowly to relieve any pressure in the tank.
- Add fuel in a clean, well-ventilated area outdoors where there are no sparks or flames. Slowly remove the fuel cap only after stopping engine. Do not smoke while fueling. Wipe up any spilled fuel from the unit immediately.
- Move the unit at least 30 feet (9.1 m) from the fueling source and site before starting the engine. Do not smoke, keep sparks and open flames from the area while adding fuel or operating the unit.

WHILE OPERATING

- Never start or run the unit inside a closed room or building. Breathing exhaust fumes can kill. Operate this unit only in a well ventilated area outdoors.
- Wear safety glasses or goggles that are marked as meeting ANSI Z87.1 standards, and ear/hearing protection when operating this unit. Wear a face or dust mask if the operation is dusty.
- Wear heavy, long pants, boots, gloves and long sleeve shirt. Do not wear, short pants, sandals or go barefoot.
- To reduce the risk of injury associated with objects being drawn into rotating parts, do not wear loose clothing, jewelry, scarves, etc. Secure hair above shoulder level.
- Use the unit only in daylight or good artificial light.
- Keep outside surfaces free from oil and fuel.
- This unit has a clutch. The tines remain stationary when the engine is idling. If they do not, have the unit adjusted by an authorized service technician.
- Be sure the tines are not in contact with anything before starting the unit.

RULES FOR SAFE OPERATION

- Avoid accidental starting. Be in the starting position whenever pulling the starter rope. The operator and unit must be in a stable position while starting. See Starting/Stopping Instructions.
- Use the right tool. Only use this tool for the purpose intended.
- Do not force unit. It will do the job better and with less likelihood of injury at a rate for which it was designed.
- Use extreme caution when reversing or pulling the unit towards you.
- Do not overreach, take extra care when working on steep slopes or inclines. Always keep proper footing and balance.
- Always hold the unit with both hands when operating. Keep a firm grip on the handlebar grips.
- Keep hands, face, and feet at a distance from all moving parts. Do not touch or try to stop the tines when they are rotating. Do not operate without guards in place.
- Do not touch the engine, muffler or gearbox. These parts get extremely hot from operation. When turned off they remain hot for a short time.
- Do not operate the engine faster than the speed needed to do the job. Do not run the engine at high speed when not in use.
- Always stop the engine when operation is delayed or when walking from one location to another.
- Stop the engine for maintenance, repair, to install or remove the tines. The unit must be stopped and the tines no longer turning to avoid injury.
- The tines become very sharp from use. Always wear heavy gloves when handling, removing, installing or cleaning the tines.
- Use only genuine Ryobi replacement parts and accessories for this unit. These are available from your authorized service dealer. Use of any non Ryobi parts or accessories could lead to serious injury to the user, or damage to the unit, and void your warranty.
- Keep unit clean of vegetation and other materials. They may become lodged between the tines and gearbox or guard.
- To reduce fire hazard, replace faulty muffler and spark arrestor, keep the engine and muffler free from grass, leaves, excessive grease or carbon build up.

OTHER SAFETY WARNINGS

- Never store the unit, with fuel in the tank, inside a building where fumes may reach an open flame or spark.
- Allow the engine to cool before storing or transporting. Be sure to secure the unit while transporting.
- Store the unit in a dry place, either locked up or up high to prevent unauthorized use or damage. Keep out of the reach of children.
- Clean the tines with a hose and water. Wipe the tines with a light machine oil to prevent rust.
- Never douse or squirt the engine with water or any other liquid. Keep handles dry, clean and free from debris. Clean after each use, see **Cleaning and Storage** instructions.
- Keep these instructions. Refer to them often and use them to instruct other users. If you loan someone this unit, also loan them these instructions.

SAVE THESE INSTRUCTIONS

SAFETY AND INTERNATIONAL SYMBOLS

This operator's manual describes safety and international symbols and pictographs that may appear on this product. Read the operator's manual for complete safety, assembly, operating and maintenance and repair information.

SYMBOL	MEANING
	• SAFETY ALERT SYMBOL Indicates danger, warning, or caution. May be used in conjunction with other symbols or pictographs.
	• WARNING - READ OPERATOR'S MANUAL Read the Operator's Manual(s) and follow all warnings and safety instructions. Failure to do so can result in serious injury to the operator and/or bystanders.
	• FOR SERVICE INFORMATION, CALL: USA: 1-800-345-8746 CANADA: 1-800-265-6778
	• WEAR EYE AND HEARING PROTECTION **WARNING:** Thrown objects and loud noise can cause severe eye injury and hearing loss. Wear eye protection meeting ANSI Z87.1 standards and ear protection when operating this unit.

RULES FOR SAFE OPERATION

SYMBOL **MEANING**

• KEEP BYSTANDERS AWAY

WARNING: Keep all bystanders, especially children and pets, at least 50 feet (15 m) from the operating area.

• PRIMER

Push primer bulb, fully and slowly, 5 to 7 times.

• UNLEADED FUEL

Always use clean, fresh unleaded fuel.

• OIL

Refer to operator's manual for the proper type of oil.

• THROWN OBJECTS CAN CAUSE SEVERE INJURY

WARNING: Do not operate unit without proper attachments and guards in place.

• ON/OFF STOP CONTROL

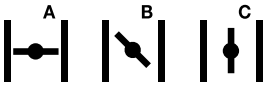
ON / START / RUN

• ON/OFF STOP CONTROL

OFF OR STOP

• HOT SURFACE WARNING

Do not touch a hot muffler, cylinder or gearbox. You may get burned. These parts get extremely hot from operation. When turned off they remain hot for a short time.



• CHOKE CONTROL

A • **FULL** choke position.
B • **PARTIAL** choke position.
C • **RUN** position.

• GARDEN CULTIVATORS – ROTATING TINES CAN CAUSE SEVERE INJURY

WARNING: Stop the engine and allow the tines to stop before installing or removing tines, or before cleaning or performing any maintenance.
Keep hands and feet away from rotating tines.

• NO STEP

Always keep proper footing and balance.Do not overreach, take extra care when working on steep slopes or inclines.

• PLACE LEFT FOOT HERE

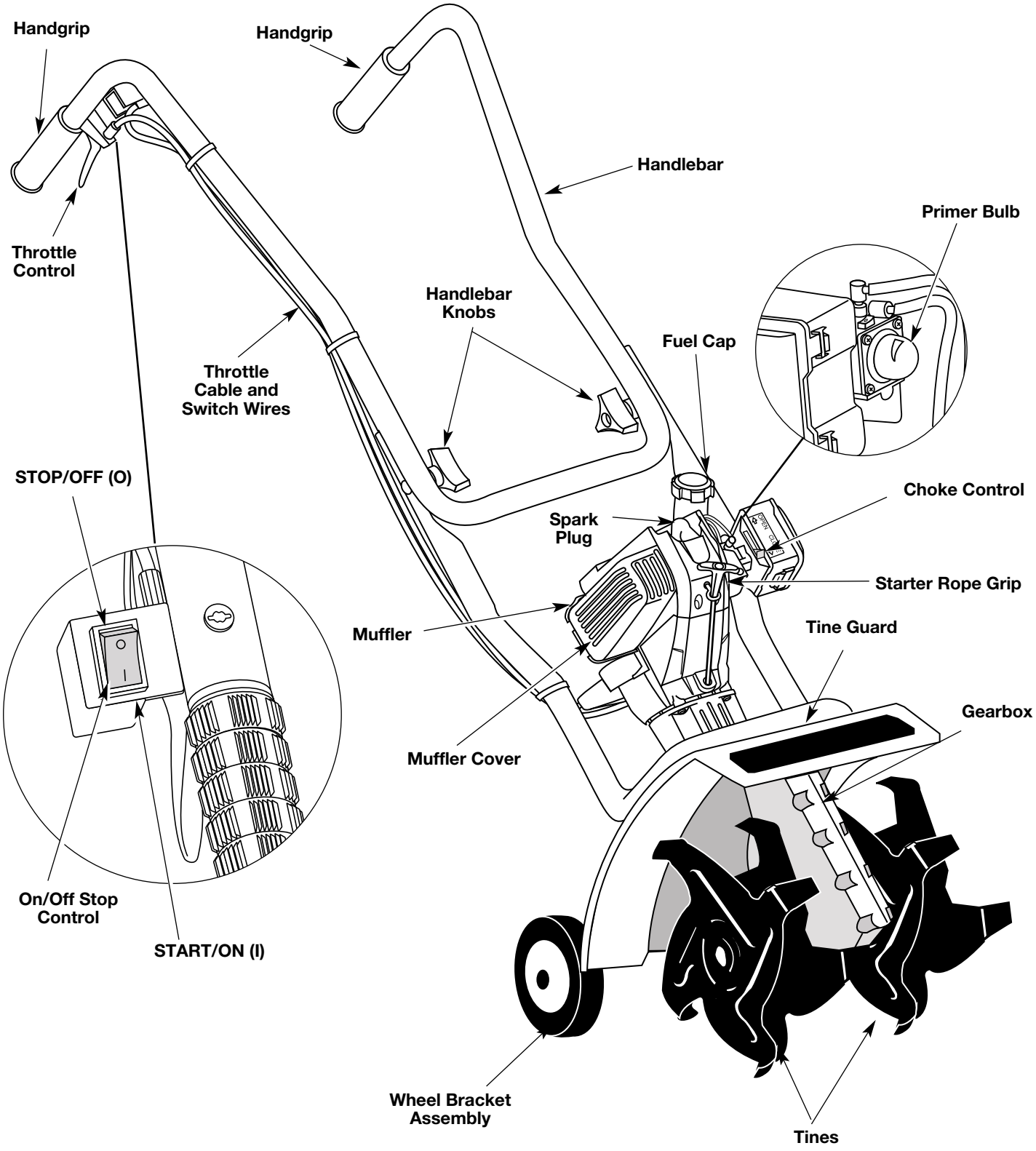
Avoid accidental starting. Be in the starting position whenever pulling the starter rope. The operator and unit must be in a stable position while starting.

RULES FOR SAFE OPERATION

KNOW YOUR UNIT

APPLICATION

Use this unit for cultivating sod and light to medium soil. Also for cultivating in garden areas, around trees, etc.



ASSEMBLY INSTRUCTIONS

ASSEMBLING THE UNIT

Your yard and garden cultivator has been completely assembled, except for the wheel bracket assembly.

NOTE: This unit is shipped without being filled with oil. In order to avoid damage to the unit, put oil in the crankcase before attempting to start unit.

Unpacking

1. Carefully unpack the contents and insure that nothing is damaged.

POSITIONING THE HANDLEBARS

1. Loosen the two knobs on the inside of the handlebars (Fig. 1).
2. With the unit upright, swing the handlebars up into the operating position (Fig. 1).

NOTE: Take care not to pinch the throttle cable or switch wires when positioning the handlebar.

3. Remove the foam padding from between the handlebar assembly.
4. Tighten the knobs to secure the handlebars in place.

NOTE: Do not over-tighten the knobs.

5. Readjust the throttle cable and switch wires so they are smooth and tight against the handlebar assembly. This will help prevent them being caught or snagged during normal operation.

ADJUSTING THE HANDLEBAR HEIGHT

1. The height for the handlebars can be adjusted by removing the knobs and mounting bolts and reinstalling through either the top or bottom holes in the handlebar assembly (Fig. 2).
2. Be sure to tighten the knobs to secure the handlebars in place.

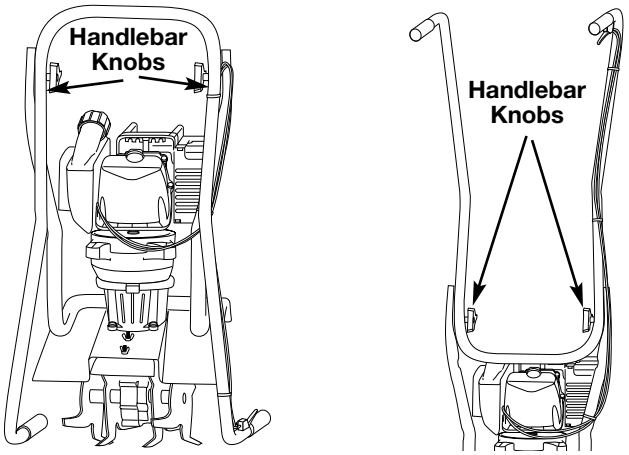


Fig. 1

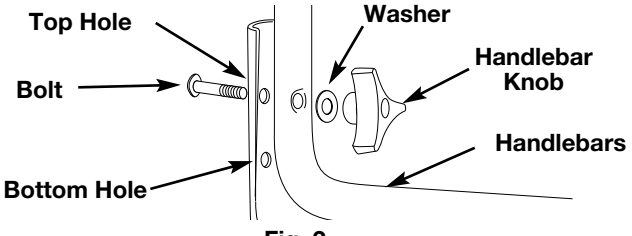


Fig. 2

INSTALLING THE WHEEL BRACKET ASSEMBLY

WARNING: To avoid injury from the tines, wear heavy gloves and a long sleeve shirt when installing the wheel bracket assembly.

WARNING: To prevent serious personal injury the wheel bracket assembly shall be installed when operating the unit.

NOTE: The wheel bracket assembly is located in the cardboard insert, inside at the top of the carton.

1. With the unit on it's side, place the wheel bracket assembly on the underside of the tine guard (Fig. 3).
2. Install a carriage bolt through each of the slotted holes in the wheel bracket and into the tine guard.
3. On the top side of the tine guard, install a lock washer and a wing nut onto each of the bolts (Fig. 3).
4. Make sure the square shoulder of the bolts are through the slotted holes in the wheel bracket. Tighten the wing nuts (Fig. 4).

NOTE: Do not over tighten the wing nuts. Loosening the wing nuts allow the wheel height to be adjusted.

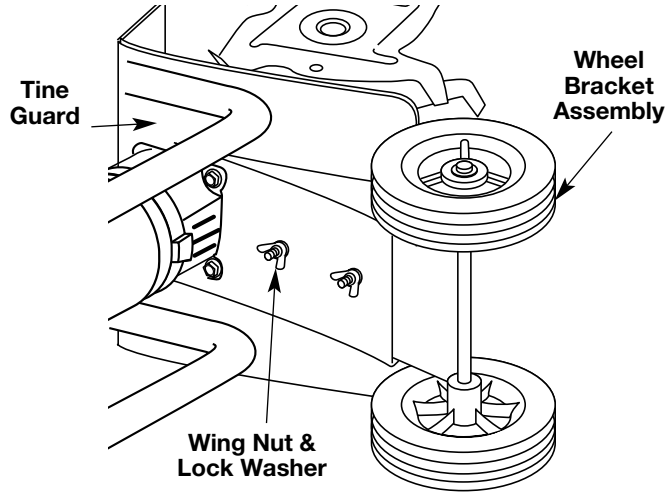


Fig. 3

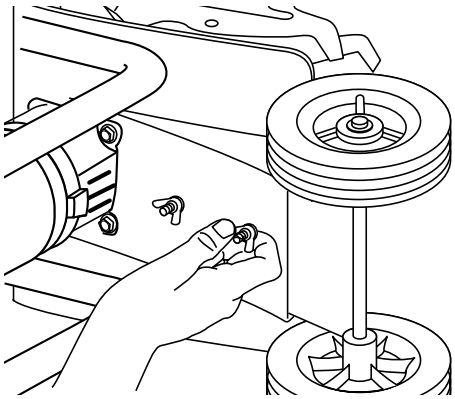


Fig. 4

OIL AND FUEL INFORMATION

RECOMMENDED OIL TYPE

Using the proper type and weight of oil in the crankcase is extremely important. Check the oil before each use and change the oil regularly. Failure to use the correct oil, or using dirty oil, can cause premature engine wear and failure.

Use a high-quality SAE 30 weight oil of API (American Petroleum Institute) service class SF, SG, SH.

ADDING OIL TO CRANKCASE – INITIAL USE

NOTE: This unit is shipped without being filled with oil. In order to avoid damage to the unit, put oil in the crankcase before attempting to start unit.

Your unit is supplied with one 3.4 fluid oz. (100 ml.) bottle of SAE 30 SF, SG, SH oil (Fig. 5).

NOTE: Save the bottle to measure the correct amount for future oil changes. See **Changing the Oil** Pg. 14.

1. Unscrew the top of the bottle of oil and remove the paper seal covering the opening. Replace top. Cut the tip off the funnel spout (Fig. 5).
2. Place the unit on a flat level surface with the cultivator in a horizontal position (Fig. 6).
3. Remove the oil plug / dipstick from the crankcase (Fig. 7).
4. Pour the entire bottle of oil into the oil fill hole (Fig. 8).

NOTE: Never add oil to the fuel or fuel tank.

5. Remove tag from oil fill plug / dipstick.
6. Wipe up any oil that may have spilled and reinstall the oil fill plug / dipstick.

The importance of checking and maintaining the proper oil level in the crankcase cannot be overemphasized. Check oil before each use and change as needed. See **Changing the Oil** Pg. 14.

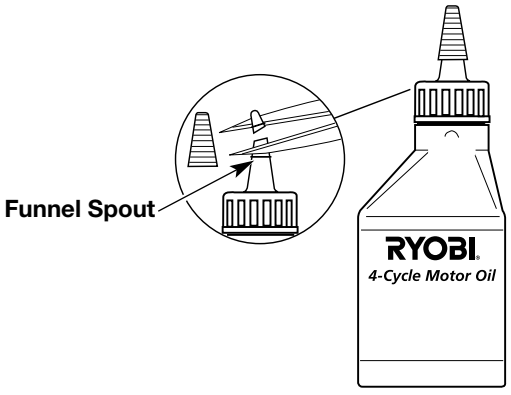


Fig. 5

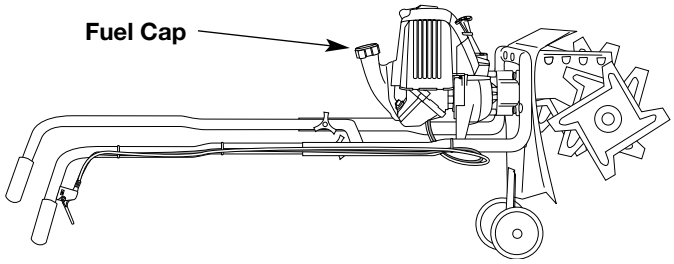


Fig. 6

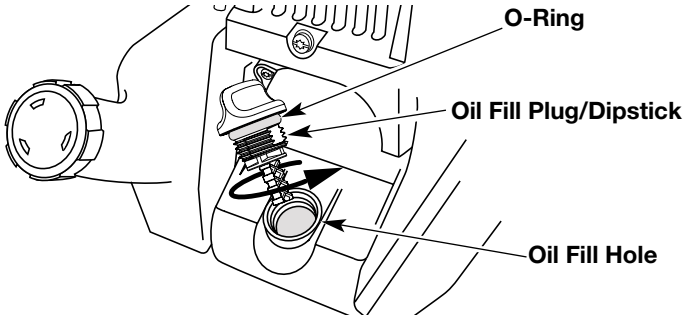


Fig. 7

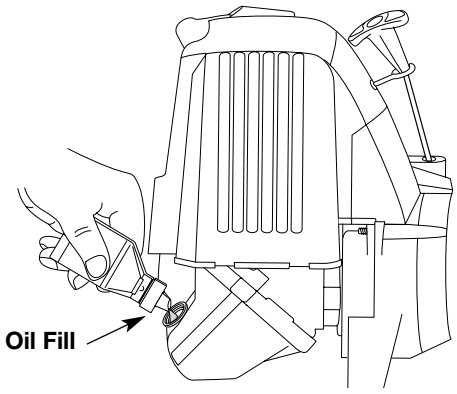


Fig. 8

RECOMMENDED FUEL TYPE

Old fuel is the primary reason for the unit not running properly. Be sure to use fresh, clean, unleaded Gasoline.

NOTE: This is a four cycle engine. In order to avoid damage to the unit, **do not mix oil with Gasoline**.

Definition of Blended Fuels

Today's fuels are often a blend of gasoline and oxygenates such as ethanol, methanol or MTBE (ether). Alcohol-blended fuel absorbs water. As little as 1% water in the fuel can make fuel form acids when stored. Use fresh fuel (less than 60 days old), when using alcohol-blended fuel.

Using Blended Fuels

If you choose to use a blended fuel, or its use is unavoidable, follow recommended precautions.

- Always use fresh unleaded gasoline
- Use the fuel additive STA-BIL® or an equivalent.
- Drain tank and run the engine dry before storing unit.

OIL AND FUEL INFORMATION

Using Fuel Additives

The use of fuel additives, such as STA-BIL® Gas Stabilizer or an equivalent, will inhibit corrosion and minimize the formation of gum deposits. Using a fuel additive can keep fuel from forming harmful deposits in the carburetor for up to six (6) months. Add 0.8 oz. (23 ml.) of fuel additive per gallon of fuel according to the instructions on the container. NEVER add fuel additives directly to the unit's gas tank.

FUELING UNIT

WARNING: Gasoline is extremely flammable and its vapors can explode if ignited. To avoid serious personal injury, always stop the engine and allow it to cool before filling the fuel tank. Do not smoke while filling the tank. Keep sparks and open flames away from the area.

1. Remove fuel cap (Fig. 9). Remove the tag from the fuel tank neck.

NOTE: Fill or add fuel to the tank only when the cultivator is in a horizontal position (Fig. 9).

WARNING: Remove fuel cap slowly to avoid injury from gasoline spray.

2. Place spout of gas container into the fill hole on the fuel tank and fill tank.

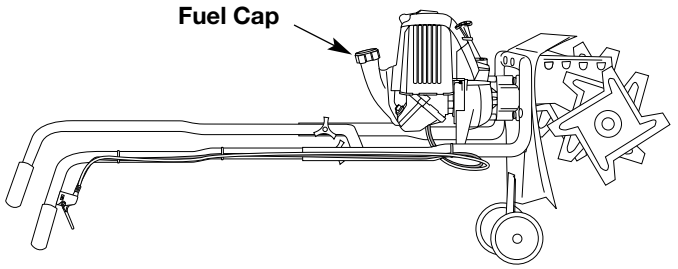


Fig. 9

WARNING: Add gasoline in a clean, well ventilated area outdoors. Avoid creating a source of ignition for spilt fuel.

NOTE: Do not overfill tank.

3. Wipe up any gasoline that may have spilled
4. Reinstall the fuel cap.

WARNING: Never operate the unit without the fuel cap securely in place.

5. Move the unit at least 30 ft. (9.1 m) from the fueling source and site before starting the engine.

NOTE: Dispose of the old gasoline in accordance to Federal, State, and Local regulations.

STARTING/STOPPING INSTRUCTIONS

STARTING INSTRUCTIONS

Cold Start - First Start of the Day or Engine Out of Fuel

WARNING: Operate this unit only in a well ventilated area outdoors. Carbon monoxide exhaust fumes can be lethal in a confined area.

WARNING: Avoid accidental starting. Be in the starting position whenever pulling the starting rope. To avoid serious personal injury, the operator and unit must be in a stable position while starting.

1. Check oil level in crankcase. See **Checking the Oil Level** Pg. 14.
2. Fill the fuel tank with fresh, clean, unleaded gasoline (see page 9).
3. Put the Start/Stop Control in the **START** [**I**] position (Fig. 10).

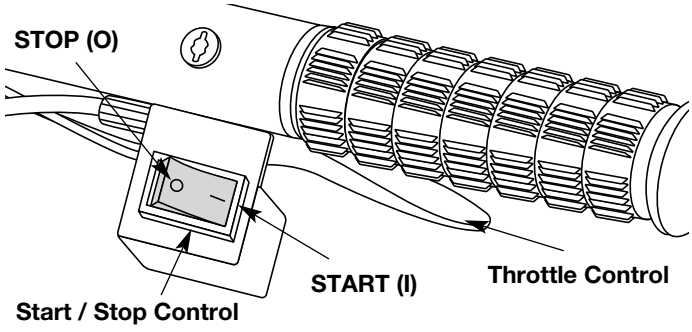


Fig. 10

4. Place the choke lever in the **FULL** choke (**A**) |↔| position (Fig. 11).

NOTE: Slide the choke lever directly above the appropriate symbol on air filter cover decal (Fig. 11).

STARTING/STOPPING INSTRUCTIONS

5. Fully press and release the primer bulb slowly 7 times. Gasoline should be felt and visible in the bulb (Fig. 11). If gasoline has not entered the bulb, press three more times, or until it does.

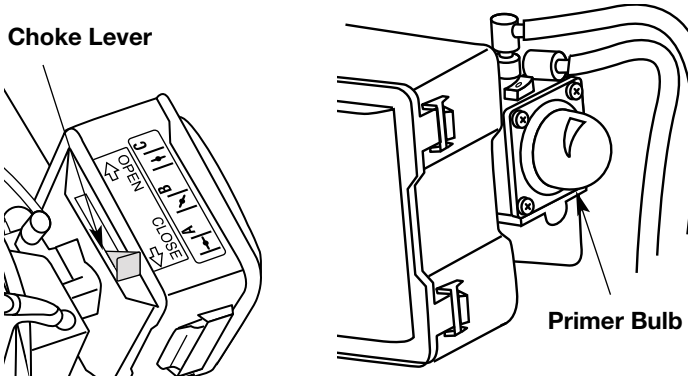


Fig. 11

6. Stand between the handlebars and support the unit by placing your left foot on the wheel bracket assembly and gripping the handlebar grip with your right hand (Fig. 12).

NOTE: Tilt the unit back slightly to bring the tines off the ground when starting.

7. While squeezing the throttle control to the wide open (full throttle) position and the choke lever in the **FULL** choke (**A**) |⊷| position, grasp the starter rope grip with your left hand and pull the starter rope briskly 5 times. If the engine attempts to run before the fifth pull, proceed to step 8.
8. Move the choke lever to the **PARTIAL** (**B**) |↘| position (Fig. 11).

NOTE: The engine will not operate in the **FULL** choke (**A**) |⊷| position.

9. While squeezing the throttle control to the wide open (full throttle) position, pull the starter rope 1 to 3 pulls until the engine starts. Run at full throttle for 15-30 seconds. If the unit fails to start return to step 6.

NOTE: If the outside temperature is below 50°F (10°C), run the unit at full throttle for 30 seconds to one (1) minute.

10. Move the choke lever to the **RUN** (**C**) |↑| position and run at full throttle for 30 seconds, and up to one (1) minute in temperatures below 50°F (10°C).

NOTE: If the engine does not start using these procedures, repeat steps 5 through 9 using TWO (2) pulls in the **FULL** choke (**A**) |⊷| position.

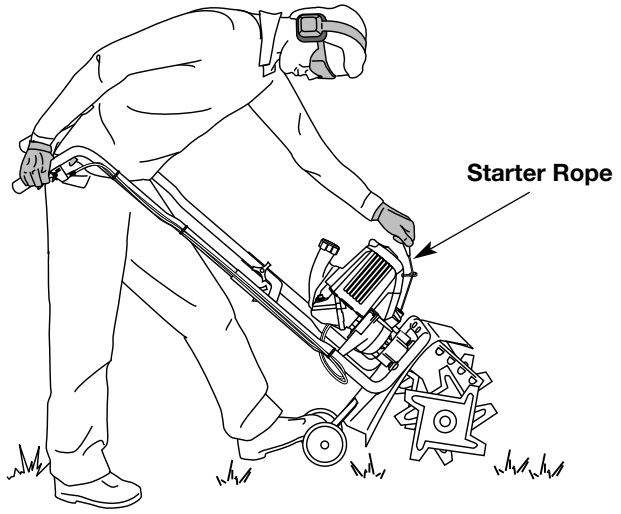


Fig. 12

Engine Re-Start - Warm Engine With Fuel

1. Put the Start/Stop Control in the **START** [**I**] position (Fig. 10).
2. Move the choke lever to the **PARTIAL** (**B**) |↘| position (Fig. 11).
3. Fully press and release the primer bulb slowly 7 times. Gasoline should be felt and visible in the bulb (Fig. 11). If gasoline has not entered the bulb, press three more times, or until it does.
4. Stand between the handlebars and support the unit by placing your left foot on the wheel bracket assembly and gripping the handlebar grip with your right hand (Fig. 12).

NOTE: Tilt the unit back slightly to bring the tines off the ground when starting.

5. Grasp the starter rope grip with your left hand and pull the starter rope briskly until the engine starts.
7. When the engine starts, move the choke lever to the **RUN** (**C**) |↑| position, and run at full throttle for 30 seconds.

NOTE: If the engine does not start using the **Engine Re-start** procedures, revert to the **Cold Start** procedures.

NOTE: 4-stroke engines, like cars, are able to start in the idle position. As an alternate method, you may want to start your unit in the idle position when the unit is **warm**. With the Start/Stop control in the **START** position, pull the starter rope briskly. When the engine starts, run at full throttle for 30 seconds. If the unit fails to start or dies, revert to the **Engine Re-Start** procedure for warm engine.

STOPPING INSTRUCTIONS

1. Release your hand from the throttle control (Fig. 10). Allow the engine to idle.
2. To stop the engine, put the Start/Stop Control in the **STOP** [**O**] position (Fig. 10).

OPERATING INSTRUCTIONS

OPERATING TIPS

WARNING: Dress properly to reduce the risk of injury when operating this unit. Do not wear loose clothing or jewelry. Wear eye and ear/hearing protection. Wear heavy, long pants, boots and gloves. Do not wear short pants, sandals or go barefoot.

1. Move the cultivator to the work area prior to starting the engine. The cultivator may be transported by pushing it on wheels or carrying it by the shaft tube grip.

WARNING: To prevent serious personal injury, never pick-up or carry the unit while the engine is running.

2. Start the unit per Starting Instructions.
3. With the engine running and the tines off the ground, depress the throttle control to increase the engine speed.
4. Holding both of the handlebar grips firmly, slowly lower the cultivator until the tines make contact with the ground (Fig. 13).
5. As cultivating action begins, pull back on the cultivator so that the tines can penetrate the ground.
6. Once the ground has been broken, continue at a moderate pace until you are familiar with the controls and the handling of the cultivator.
7. Pull the cultivator backwards to improve the depth of cultivation and reduce your effort.
8. If the tines are digging too deep or not deep enough, adjust the tines per Adjusting Tine Depth.

Fig. 13

ADJUSTING TINE DEPTH

Tine adjustment will vary depending on the type of soil being cultivated and how it will be used. Generally, adjusting the tines to break the soil 4 to 6 inches is recommended for most gardens. Adjust the tines as follows:

1. Stop the engine and disconnect the plug wire.
2. Loosen (do not remove) the two wing nuts on the tine guard (Fig. 14).
3. Slide the wheel bracket assembly down for shallower and up for deeper tine penetration.
4. Once the tines are in the desired position, tighten the wing nuts, making sure that the carriage bolts are seated properly through the bracket.
5. If the tine depth is not correct, repeat steps 2 to 4.

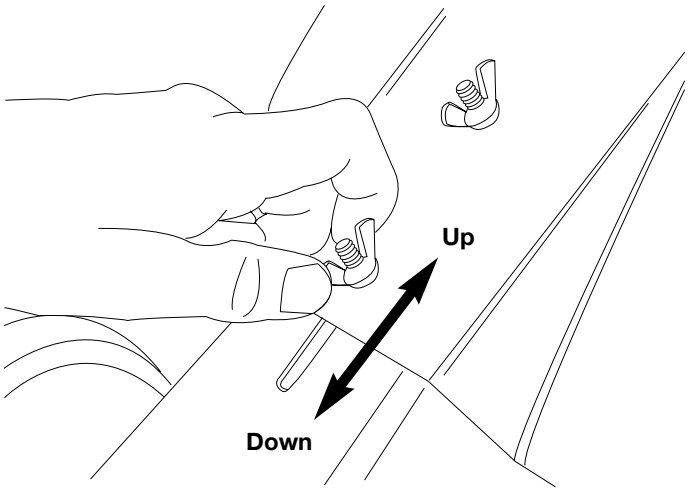


Fig. 14

Transporting the Unit

WARNING: To prevent serious personal injury, always stop the engine when operation is delayed or when transporting the unit from one location to another.

1. Stop the engine.
2. Slide the wheel bracket assembly all the way down.
3. Tilt the unit back until the tines clear the ground.
4. Push or pull the unit to the next location to be cultivated.

MAINTENANCE AND REPAIR INSTRUCTIONS

NOTE: Some maintenance procedures may require special tools or skills. If you are unsure about these procedures take your unit to an authorized service dealer.

WARNING: To prevent serious injury, never do maintenance or repairs with unit running. Always do maintenance and repairs on a cool unit. Disconnect spark plug wire to ensure the unit will not start.

MAINTENANCE SCHEDULE

These required maintenance procedures should be performed at the frequency stated in the table. They should also be included as part of any seasonal tune-up.

FREQUENCY	MAINTENANCE REQUIRED	REFER TO:
Before Starting Engine	Fill fuel tank with fresh fuel Check oil	Page 9-10 Page 14
Every 10 Hours	Clean and re-oil air filter.	Page 15
1st Change at 10 Hours Every 25 Hours there after Every 25 Hours	Change oil Change oil Clean Spark Arrestor	Page 14 Page 14 Page 18
10 hours on new engine Every 50 Hours Every 50 Hours	Check rocker arm to valve clearance and adjust as required Check rocker arm to valve clearance and adjust as required Check spark plug condition and gap	Page 16-17 Page 16-17 Page 18

TINE REMOVAL AND REPLACEMENT

All 4 tines should be replaced at the same time because they will wear evenly through normal use. Work on one side at a time.

WARNING: To prevent serious personal injury, always wear heavy gloves when handling the tines.

1. Put the On/Off Stop Control in the STOP (**O**) position and disconnect the spark plug wire.
2. Remove the clevis pin clips and clevis pins (Fig. 15).
3. Remove the tines and felt cushions from the shaft.
4. Clean and oil the shaft.
5. Replace the tines and felt cushions by reversing steps 2 and 3 (Fig. 16).

NOTE: When installed correctly, the hubs on the tines will face each other and the letter “R” stamped on the tines will appear on the right side of the cultivator and the letter “L” will appear on the left side from the normal operating position. It is important that the tines are installed correctly.

6. Repeat this procedure on the opposite side.

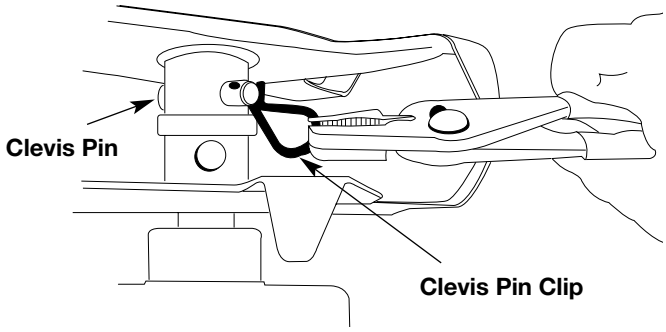


Fig. 15

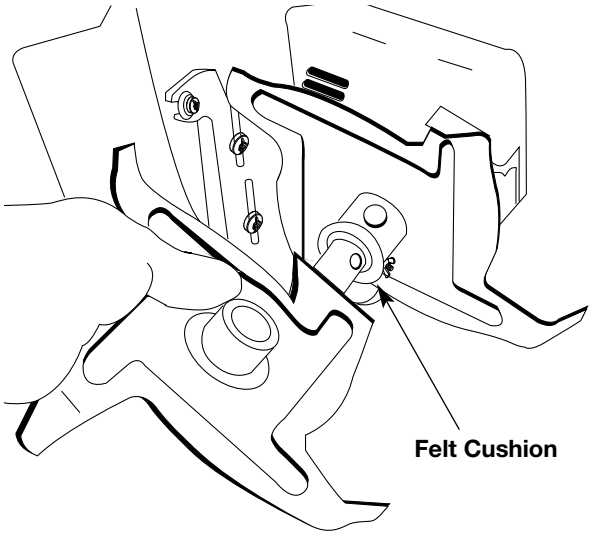


Fig. 16

CHECKING THE OIL LEVEL

CAUTION: To prevent extensive engine wear and damage to the unit, always maintain the proper oil level in the crankcase. Never operate the unit with the oil level below the bottom of the dipstick.

The importance of checking and maintaining the proper oil level in the crankcase cannot be overemphasized. Check oil before each use:

1. Stop engine and allow oil to drain into the crankcase.
2. Place the unit on a flat, level surface with the cultivator in a horizontal position to get a proper oil level reading (Fig. 17).
3. Keep dirt, grass clippings, etc., out of the engine. Clean the area around the oil fill plug/dipstick before removing it.
4. Remove the oil fill plug/dipstick and wipe off oil. Reinsert it all the way back in.
5. Remove the oil fill plug/dipstick and check oil level. Oil should be up to the top of the dipstick (Fig. 18).

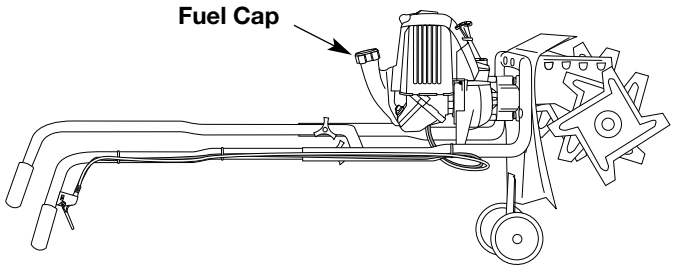


Fig. 17

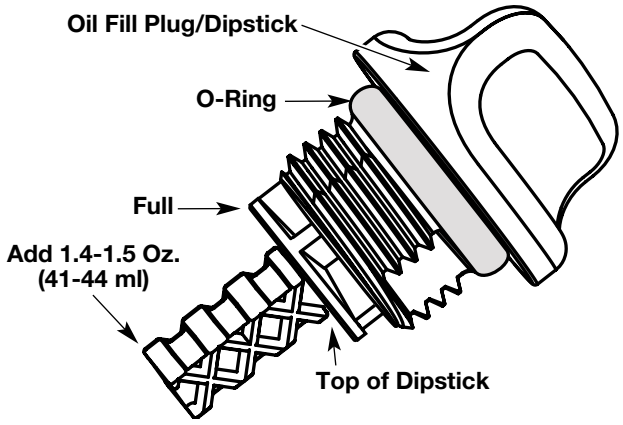


Fig. 18

6. If the level is low, add a small amount of oil to the oil fill hole and recheck (Fig. 18). Repeat until the oil level reaches the top of the dipstick.

NOTE: Do not overfill the unit.

NOTE: Make sure the O-ring is in place on the oil fill plug/dipstick when checking and changing the oil (Fig. 19).

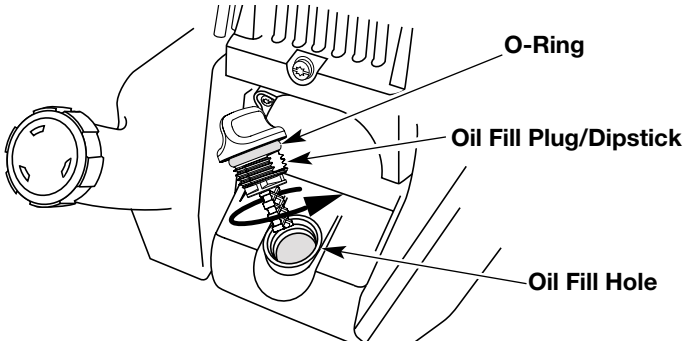


Fig. 19

CHANGING THE OIL

For a new engine, change the oil after the first 10 hours of operation. Change the oil while the engine is still warm. The oil will flow freely and carry away more impurities.

CAUTION: Wear gloves to prevent injury when handling the unit.

1. Unplug spark plug boot to eliminate starting
2. Fold the handlebars down to ease in maneuvering the unit.
3. Remove the oil fill plug/dipstick.
4. Pour the oil out of the oil fill hole and into a container by tipping the unit to a vertical position (Fig. 20). Allow ample time for complete drainage.

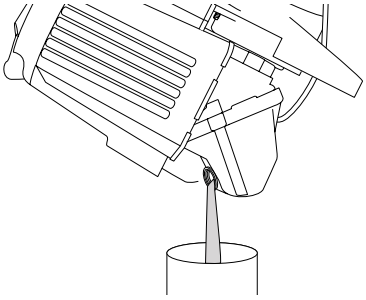


Fig. 20

5. Wipe up any oil residue on the unit and clean up any oil that may have spilled. Dispose of the oil according to Federal, State and local regulations.
6. Refill the crankcase with 3.4 fluid ounce (100 ml) of SAE 30 SF, SG, SH oil.

NOTE: Use the bottle and spout saved from initial use to measure the correct amount. 3.4 ounce (100 ml) is approximately to the top of the label on the bottle (Fig. 21). Check the level with the dipstick. If the level is low, add a small amount of oil and recheck (Fig. 18). Do not overfill.

7. Replace the oil fill plug/dipstick.
8. Reconnect spark plug boot. Reposition the handlebars to the operating position.

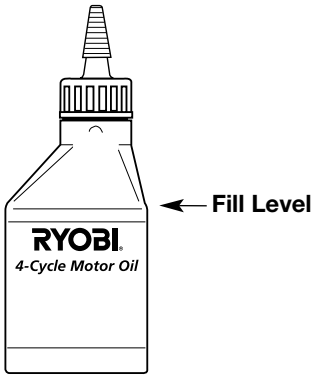


Fig. 21

AIR FILTER MAINTENANCE

Cleaning the Air Filter

WARNING: To avoid serious personal injury, always turn your unit off and allow it to cool before you clean or do any maintenance on it.

Clean and re-oil the air filter every 10 hours of operation. It is an important item to maintain. Not maintaining the air filter will **VOID** the warranty.

1. Open the air filter cover. Push the tab on the left side of the cover in, swing the air filter cover out and off the air filter housing (Fig. 22).
2. Remove the air filter (Fig. 22).

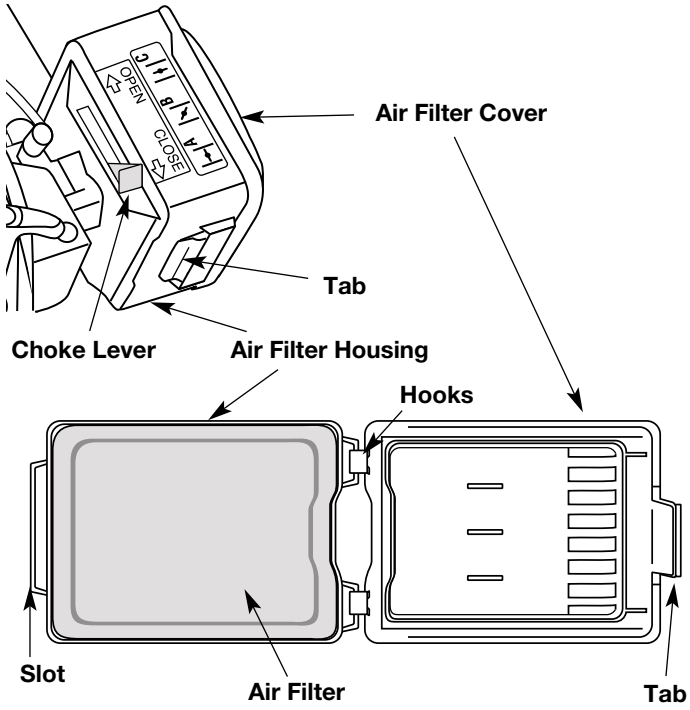


Fig. 22

3. Wash the filter in detergent and water (Fig. 23). Rinse the filter thoroughly and allow it to dry.

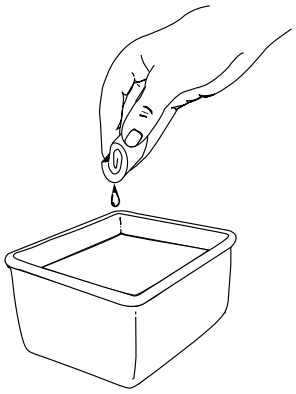


Fig. 23

4. Apply enough clean SAE 30 motor oil to lightly coat the filter (Fig. 24).

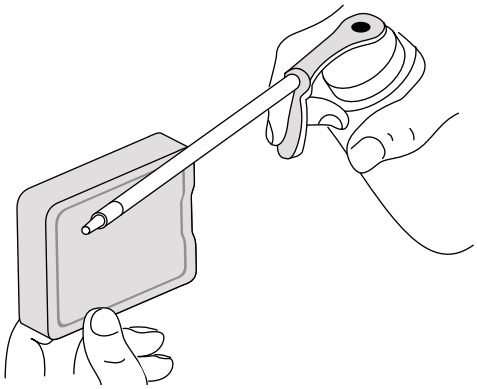


Fig. 24

5. Squeeze the filter to spread and remove excess oil (Fig. 25).

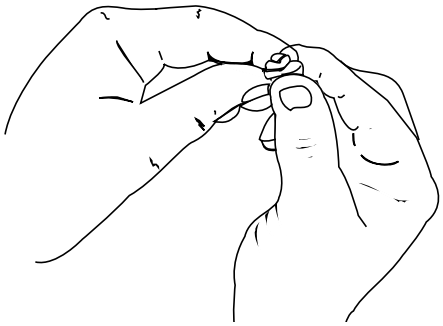


Fig. 25

6. Replace the filter (Fig. 22).

NOTE: If the unit is operated without the air filter, you will **VOID** the warranty.

7. Reinstall the air filter cover. Position the hooks on the right side of the air filter cover into the slots at the right side of the air filter housing (Fig. 22).
8. Swing the cover to the left until the tab on the air filter cover snaps into place in the slot on the left side of the air filter housing (Fig. 22).

CARBURETOR ADJUSTMENT

The idle speed of the engine is adjustable. An idle adjustment screw is reached though a hole in the top of the engine cover (Fig 26).

NOTE: Careless adjustments can seriously damage your unit. An authorized service dealer should make carburetor adjustments.

Check Fuel

Old fuel is usually the main reason for the unit not running properly. Drain and refill the tank with clean, fresh unleaded fuel prior to doing any adjustments. Refer to **Oil and Fuel Information**.

Clean Air Filter

The condition of the air filter is important to the operation of the unit. A dirty air filter will restrict air flow and change the air/fuel mixture. This is often mistaken for an out of adjustment carburetor. Check the condition of the air filter before adjusting the idle speed screw. Refer to **Air Filter Maintenance**.

Adjust Idle Speed Screw

WARNING: This unit will need to be running during idle speed adjustment. Wear protective clothing and observe all safety instructions to prevent serious personal injury.

If after checking the fuel and cleaning the air filter the engine still will not idle, adjust the idle speed screw as follows.

1. Start the engine and let it run at a high idle for a minute to warm up.

NOTE: Ensure the tines are not in contact with the ground when adjusting the idle.

2. Release the throttle trigger and let the engine idle. If the engine stops, insert a small phillips or flat blade screwdriver into the hole in the engine cover (Fig. 26). Turn the idle speed screw in, clockwise, 1/8 of a turn at a time (as needed) until the engine idles smoothly.

NOTE: The tines should not rotate when the engine idles.

3. If the tines rotate when the engine idles, turn the idle speed screw **counterclockwise** 1/8 of a turn at a time (as needed), to reduce idle speed.

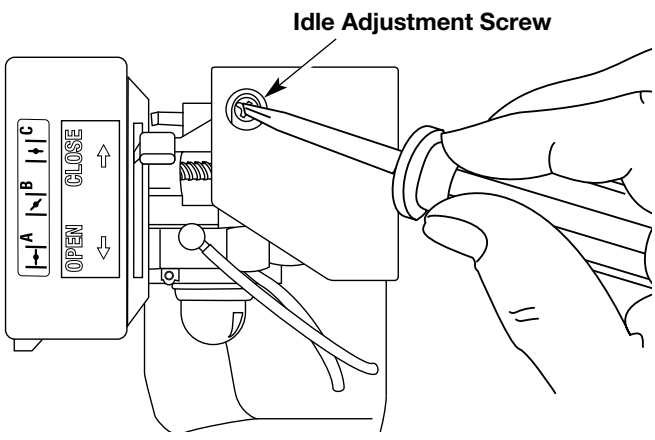


Fig. 26

Checking the fuel, cleaning the air filter, and adjusting the idle speed screw should solve most engine problems.

If not and:

- The engine will not idle,
- The engine hesitates or stalls on acceleration,
- There is a loss of engine power,

have the carburetor adjusted by an authorized service dealer.

ROCKER ARM CLEARANCE

This requires disassembly of the engine. If you feel unsure or unqualified to perform this, take the unit to an authorized service center.

NOTE: Inspect the valve to rocker arm clearance with a feeler gauge after the first 10 hours of operation and then every 50 hours of operation thereafter.

- The engine must be cold when checking or adjusting the valve clearance.
- This task should be performed inside, in a clean, dust free area.

1. Remove the muffler cover by pressing down on the corner with a flat blade screwdriver (Fig. 27). Slide the notches on the sides of the muffler cover over the tabs on the engine cover and remove

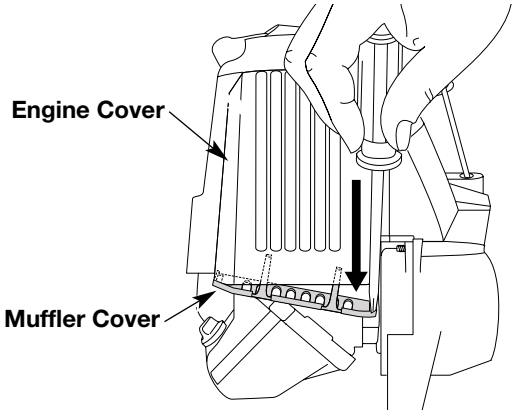


Fig. 27

2. Remove the two (2) screws on top of the engine cover with a phillips screwdriver (Fig. 28).
3. Remove the screw on back of the engine cover (Fig. 29).

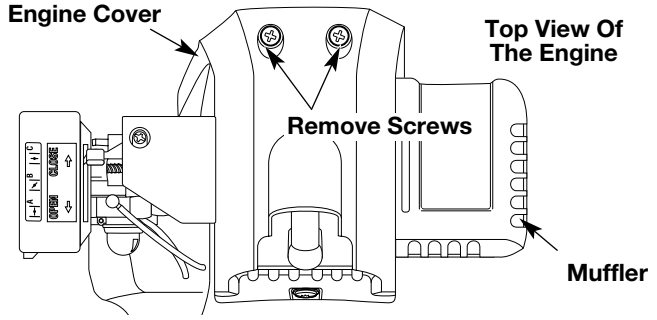


Fig. 28

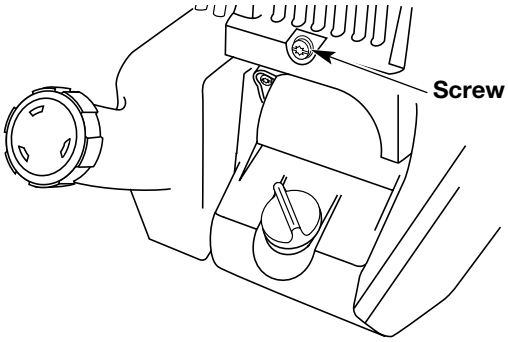


Fig. 29

4. Disconnect the spark plug wire.
5. Clean dirt from around the spark plug. Remove the spark plug from the cylinder head by turning a 5/8 in. socket counterclockwise.
6. Remove the engine cover.

NOTE: Pull the starter rope out a little, to give some slack, to ease the removal of the engine cover.

7. Clean dirt from around the rocker arm cover. Remove the screw holding the rocker arm cover with a large flat blade screwdriver or Torx T25 bit (Fig. 30). Remove the rocker arm cover and gasket.

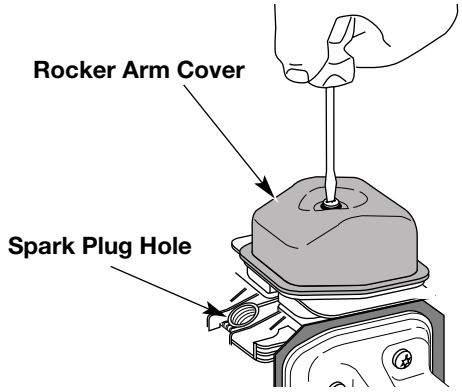


Fig. 30

8. Pull the starter rope slowly to bring the piston to the top of its travel, (known as top dead center). Check that:
   - The piston is at the top of its travel while looking in the spark plug hole (Fig. 30).
   - Both rocker arms move freely, and both valves are closed.

If not, repeat this step.

9. Slide the feeler gauge between the rocker arm and the valve return spring. Measure the clearance between the valve stem and rocker arm (Fig 31). Do both intake and exhaust valves.

The recommended clearance for both intake and exhaust is .003 – .006 in. (.076 – 0.152 mm). Use a standard automotive .005 in. (0.127 mm) feeler gauge. The feeler gauge should slide between the rocker arm and valve stem with a slight amount of resistance, without binding (Fig. 32).

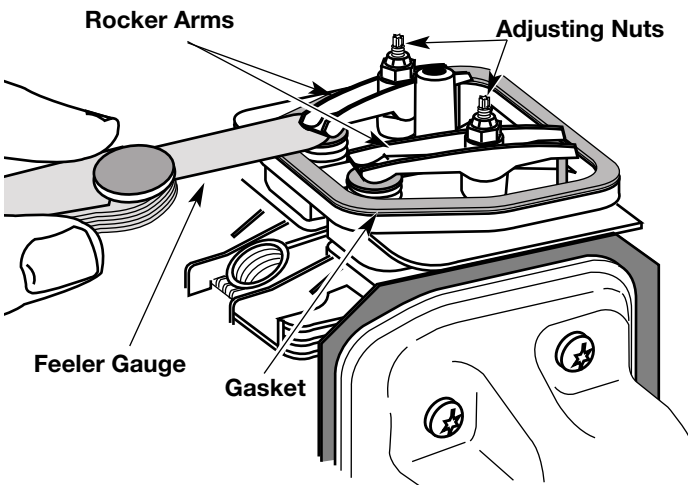


Fig. 31

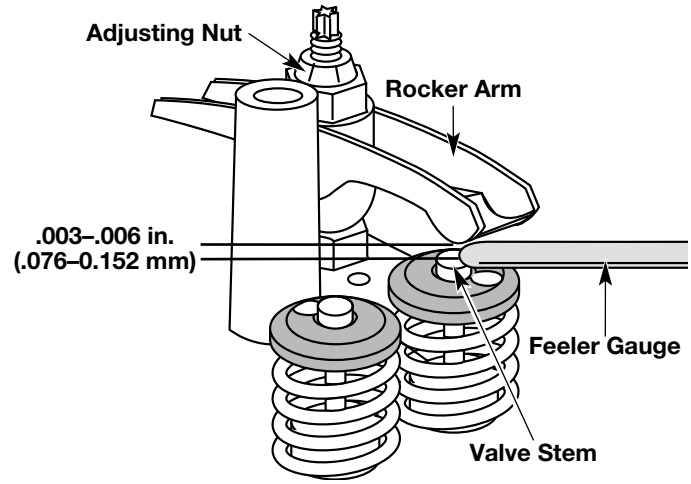


Fig. 32

10. If the clearance is not within specification:
    a. Turn the adjusting nut using a 5/16 inch (8 mm) wrench or nut driver (Fig. 32).
    - To increase clearance, turn the adjusting nut counterclockwise.
    - To decrease clearance, turn the adjusting nut clockwise.

    b. Recheck both clearances, and adjust as necessary.
11. Reinstall the rocker arm cover using a new gasket. Torque the screw to 20–30 in•lb (2.2–3.4 N•m).

NOTE: A rocker arm cover gasket, Part # 182099 can be purchased from your local authorized dealer.

12. Reinstall the engine cover. Check alignment of the cover before tightening the screws. Tighten screws.
13. Replace the muffler cover. Slip the long tabs on the muffler cover into the engine cover. Slide the notches on the side of the muffler cover over the tabs on the engine cover and snap into place (Fig. 27).
14. Check the spark plug and reinstall. See **Replacing the Spark Plug**.
15. Replace the spark plug wire.

REPLACING THE SPARK PLUG

Use only genuine Ryobi spark plugs. The correct air gap is 0.025 in. (0.655 mm). Remove the plug after every 50 hours of operation and check its condition.

1. Stop the engine and allow it to cool. Grasp the plug wire firmly and pull the cap from the spark plug.
2. Clean dirt from around the spark plug. Remove the spark plug from the cylinder head by turning counterclockwise using a 5/8 inch deep socket.
3. Replace cracked, fouled or dirty spark plug. Set the air gap at 0.025 in. (0.655 mm) using a feeler gauge (Fig. 33).

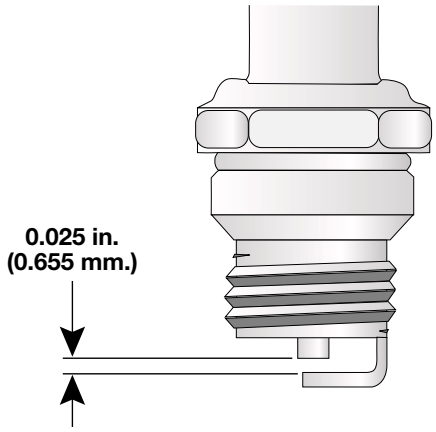


Fig. 33

CAUTION: Do not sand blast, scrape, or clean electrodes. Grit in the engine could damage the cylinder.

4. Install a correctly gapped spark plug in the cylinder head. Tighten by turning the 5/8 inch deep socket clockwise until snug.

If using a torque wrench torque to;

110-120 in.•lb. (12.3-13.5 N•m).

Do not over tighten.

SPARK ARRESTOR MAINTENANCE

1. Remove the muffler cover. See **Rocker Arm Clearance**, Pg. 16.
2. With a flat blade screwdriver or Torx T20 bit, remove the screw attaching the spark arrestor cover to the muffler (Fig. 34).

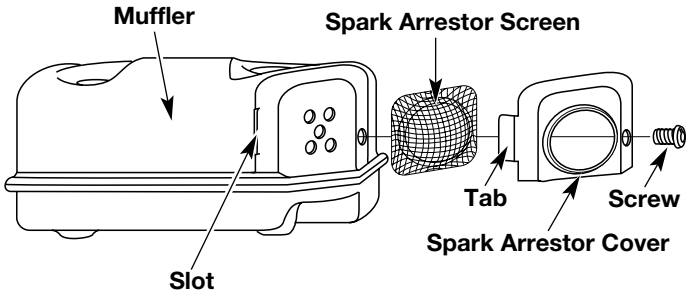


Fig. 34

3. Pull the tab on the spark arrestor cover out of the muffler. Remove the spark arrestor cover.
4. Remove the spark arrestor screen from the spark arrestor cover.
5. Clean the spark arrestor screen with a wire brush, or replace.
6. Reinstall the spark arrestor screen, spark arrestor cover, and screw.

ACCESSORIES/REPLACEMENT PARTS

4-Cycle Oil	181786
Oil Fill Plug / Dipstick	182378
Spark Plug	180852
Spark Arrestor Screen	180890
Fuel Cap	182271
Tine (Left Outer or Right Inner)	147471
Tine (Right Outer or Left Inner)	147472
Clevis Pin with Clip	147473

These replacement parts can be purchased from your local authorized dealer.

CLEANING AND STORAGE

CLEANING THE UNIT

WARNING: To avoid serious personal injury, always turn the unit off and allow it to cool before you clean or perform any maintenance on it.

- Use a small brush to clean off the outside of the unit and to keep the air vents free of obstructions.
- Do not use strong detergents or petroleum based cleaners, such as kerosene. Some household cleaners contain aromatic oils such as pine and lemon that can damage the plastic housings or handles. Wipe off any moisture with a soft cloth.

STORAGE

- Never store the unit with fuel in the tank where fumes may reach an open flame or spark.
- Allow the engine to cool before storing.
- Store the unit in a locked up area to prevent unauthorized use or damage.
- Store the unit in a dry, well ventilated area.
- Store the unit out of the reach of children.

LONG TERM STORAGE

If the unit will be stored for an extended time,

1. Drain all gasoline from the gas tank into a container . Do not use gas that has been stored for more than 60 days. Dispose of the old gasoline in accordance with Federal, State, and Local regulations.
2. Start the engine and allow it to run until it stalls. This ensures that all gasoline has been drained from the carburetor.
3. Allow the engine to cool. Remove the spark plug and put 1 oz. (30 ml) of high quality motor oil into the cylinder. Pull the starter rope slowly to distribute the oil. Reinstall the spark plug.

NOTE: Remove the spark plug and drain all of the oil from the cylinder before attempting to start the unit after storage.

4. Change the oil. See **Changing the Oil**, Pg. 14. Dispose of the old oil in accordance with Federal, State, and Local regulations.
5. Thoroughly clean the unit and inspect for any loose or damaged parts. Repair or replace damaged parts and tighten loose screws, nuts or bolts.
6. To take up less storage area, loosen the handlebar knobs and fold the handlebar down, (Fig. 35). The unit is ready for storage.

TRANSPORTING

- Allow the engine to cool before transporting.
- Secure the unit while transporting.
- Drain the fuel tank before transporting.
- Tighten fuel cap before transporting.

MOVING THE UNIT

1. Allow the unit to cool before moving.
2. Loosen the knobs on the handlebar.
3. Fold the handlebars down as shown (Fig. 35).
4. Stand between the handlebars and grasp the center of the bar to use as a carrying handle (Fig. 36).
5. After the unit has been moved, reposition the handlebars and continue operation.

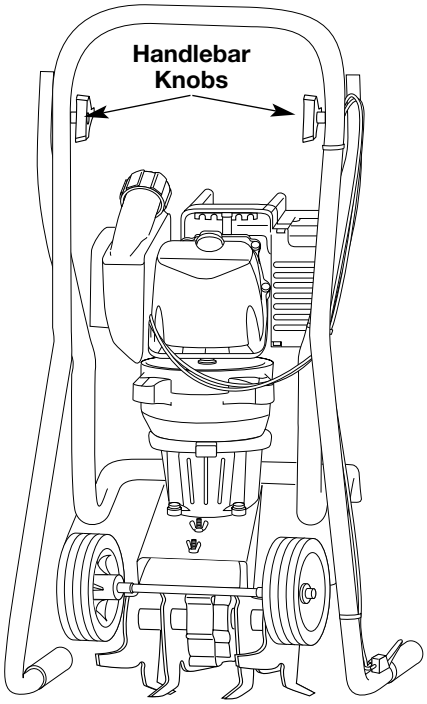


Fig. 35

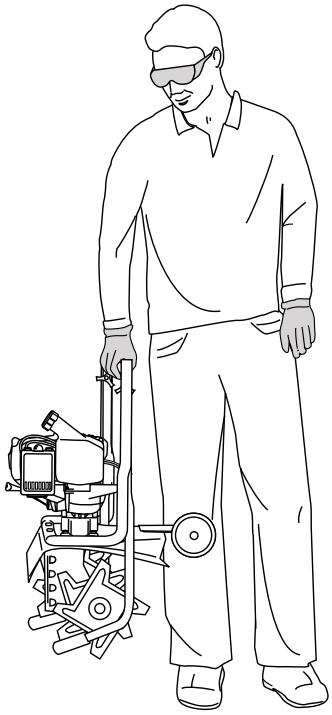


Fig. 36

TROUBLESHOOTING

ENGINE WILL NOT START

CAUSE	ACTION
Ignition switch is OFF	Turn switch to ON
Empty fuel tank	Fill fuel tank
Primer bulb wasn't pressed enough	Press primer bulb fully and slowly 5-7 times
Engine flooded	Use starting procedure with choke lever in the RUN position, Pg. 10
Old Gasoline	Drain fuel tank / Add fresh Gasoline
Fouled spark plug	Replace or clean the spark plug

ENGINE WILL NOT IDLE

CAUSE	ACTION
Air Filter is Plugged	Replace or clean the air filter
Old Gasoline	Drain fuel tank / Add fresh Gasoline
Improper carburetor adjustment	Adjust per instruction Pg. 16

ENGINE WILL NOT ACCELERATE

CAUSE	ACTION
Old Gasoline	Drain gas tank / Add fresh Gasoline
Improper carburetor adjustment	Take to an authorized service dealer for carburetor adjustment
Dirty air filter	Clean or replace the air filter
Clogged Spark Arrestor Screen	Clean or Replace. See Pg. 18

ENGINE LACKS POWER OR STALLS WHEN UNDER LOAD

CAUSE	ACTION
Old Gasoline	Drain gas tank / Add fresh Gasoline
Improper carburetor adjustment	Take to an authorized service dealer for carburetor adjustment
Cultivator tines bound with dirt or grass	Stop the unit, switch the On/Off Stop Control to STOP, clean and remove any debris binding the tines

SIGNS OF OIL AROUND OIL FILL PLUG/DIPSTICK

CAUSE	ACTION
Oil fill plug/dipstick loose or missing o-ring	Tighten oil fill plug/dipstick, replace o-ring.

SPECIFICATIONS

ENGINE

Engine Type	Air-Cooled, 4-Cycle
Displacement	1.6 cu. in. (26.2 cc)
Idle Speed RPM	3,200-3,400 rpm
Operating RPM	6,800-8,500 rpm
Clutch Type	Centrifugal
Ignition Type	Electronic
On/Off Stop Control	Rocker Switch
Valve clearance (intake and exhaust)	.003–.006 in. (.076–.0152 mm)
Spark Plug Gap	0.025 inch (0.655 mm)
Lubrication	SAE 30 Oil
Crankcase Oil Capacity	3.4 oz (100 ml)
Fuel	Unleaded
Carburetor	Diaphragm, All-Position
Starter	Auto Rewind
Muffler	Baffled with Guard
Throttle	Spring Return
Fuel Tank Capacity	17 oz (500 ml)
Fuel Tank	HD Polyethylene

CULTIVATOR

Throttle Control	Finger-Tip Trigger
Cultivating Path Width (Maximum)	9 inches (22.86 cm)
Cultivating Depth (Maximum)	6 inches (15.24 cm)
Weight (no fuel)	25.25 lb. (11.45 kg)

NOTES

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT
YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Ryobi Outdoor Products (ROP), are pleased to explain the emission control system warranty on your 2000 and later small off-road engine. In California, new small off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. ROP must warrant the emission control system on your small off-road engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road engine.

Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, ROP will repair your small off-road engine at no cost to you including diagnosis, parts and labor.

The 2000 and later small off-road engines are warranted for two years. If any emission-related part on your engine is defective, the part will be repaired or replaced by ROP.

OWNER'S WARRANTY RESPONSIBILITIES:

- As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your operator's manual. ROP recommends that you retain all receipts covering maintenance on your small off-road engine, but ROP cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the small off-road engine owner, you should however be aware that ROP may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- You are responsible for presenting your small off-road engine to a Ryobi Authorized Service Center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should call 1-800-345-8746.

MANUFACTURER'S WARRANTY COVERAGE:

- The warranty period begins on the date the engine or equipment is delivered to the retail purchaser.
- The manufacturer warrants to the initial owner and each subsequent purchaser, that the engine is free from defects in material and workmanship which cause the failure of a warranted part for a period of two years.
- Repair or replacement of warranted part will be performed at no charge to the owner at an Authorized Ryobi Service Center. For the nearest location, please contact Ryobi at: 1-800-345-8746.
- Any warranted part which is not scheduled for replacement, as required maintenance which is scheduled only for regular inspection to the effect of "Repair or replace as necessary" is warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance will be warranted for the period of time up to the first scheduled replacement point for that part.
- The owner will not be charged for diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an Authorized Ryobi Service Center.
- The manufacturer is liable for damages to other engine components caused by the failure of a warranted part still under warranty.
- Failures caused by abuse, neglect or improper maintenance are not covered under warranty.
- The use of add-on or modified parts can be grounds for disallowing a warranty claim. The manufacturer is not liable to cover failures or warranted parts caused by the use of add-on or modified parts.
- In order to file a claim, go to your nearest Authorized Ryobi Service Center. Warranty services or repairs will be provided at all Authorized Ryobi Service Centers.
- Any manufacturer approved replacement part may be used in the performance of any warranty maintenance or repair of emission related parts and will be provided without charge to the owner. Any replacement part that is equivalent in performance or durability may be used in non-warranty maintenance or repair and will not reduce the warranty obligations of the manufacturer.
- The following components are included in the emission related warranty of the engine, air filter, carburetor, primer, fuel lines, fuel pick up/fuel filter, ignition module, spark plug and muffler.

LIMITED TWO-YEAR WARRANTY

RYOBI OUTDOOR PRODUCTS warrants each new RYOBI Product for two (2) years according to the following terms.

This warranty extends to the original retail purchaser only and commences on the date of original retail purchase.

Any part of the RYOBI Product manufactured or supplied by RYOBI and found in the reasonable judgement of RYOBI to be defective in material or workmanship will be repaired or replaced by an authorized RYOBI service dealer without charge for parts and labor.

The RYOBI Product including any defective part must be returned to an authorized service dealer within the warranty period. The expense of delivering the RYOBI Product to the dealer for warranty work and the expense of returning it back to the owner after repair or replacement will be paid for by the owner. RYOBI's responsibility in respect to claims is limited to making the required repairs or replacements and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any RYOBI Product. Proof of purchase will be required by the dealer to substantiate any warranty claim. All warranty work must be performed by an authorized RYOBI service dealer.

This warranty is limited to ninety (90) days from the date of original retail purchase for any RYOBI Product that is used for rental or commercial purposes, or any other income-producing purpose.

This warranty does not cover any RYOBI Product that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the RYOBI Operator's Manual. This warranty does not apply to any damage to the RYOBI Product that is the result of improper maintenance or to any RYOBI Product that has been altered or modified so as to adversely affect the product's operation, performance or durability or that has been altered or modified so as to change its intended use. The warranty does not extend to repairs made necessary by normal wear or by the use of parts or accessories which are either incompatible with the RYOBI Product or adversely affect its operation, performance or durability.

In addition, this warranty does not cover:

A. Tune-ups - Spark Plugs, Carburetor Adjustments, Filters

B. Wear items - Starter Pulley,Starter Ropes, Tines

RYOBI reserves the right to change or improve the design of any RYOBI Product without assuming any obligation to modify any product previously manufactured.

ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE TWO (2) YEAR WARRANTY PERIOD OR NINETY (90) DAYS FOR PRODUCTS USED FOR ANY COMMERCIAL PURPOSE. ACCORDINGLY, ANY SUCH IMPLIED WARRANTIES INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE APPROPRIATE TWO-YEAR OR NINETY DAY WARRANTY PERIOD. RYOBI'S OBLIGATION UNDER THIS WARRANTY, IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS, AND ROP DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

RYOBI ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO EXPENSE OF RETURNING THE RYOBI PRODUCT TO AN AUTHORIZED SERVICE DEALER AND EXPENSE OF DELIVERING IT BACK TO THE OWNER, MECHANIC'S TRAVEL TIME, TELEPHONE OR TELEGRAM CHARGES, RENTAL OF A LIKE PRODUCT DURING THE TIME WARRANTY SERVICE IS BEING PERFORMED, TRAVEL, LOSS OR DAMAGE TO PERSONAL PROPERTY, LOSS OF REVENUE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, OR INCONVENIENCE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty applies to all RYOBI Products manufactured by RYOBI and sold in the United States and Canada.

To locate your nearest service dealer dial 1-800-345-8746 in the United States or 1-800-265-6778 in Canada.

RYOBI®

RYOBI OUTDOOR PRODUCTS
550 N. 54th Street
Chandler, AZ 85226 U.S.A.

RYOBI CANADA INC.
275 Industrial Rd
Cambridge, Ontario N1R 6K2 CANADA

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

FOR QUESTIONS CALL 1-800-345-8746 IN U.S.
OR 1-800-265-6778 IN CANADA

OPERATOR'S MANUAL PART NO. 182648 **REV. B (7905)**
PRINTED IN U.S.A. **1/00**